Marine Physical Laboratory

Shallow Water Adaptive Array Processing and Data Analysis

W. S. Hodgkiss

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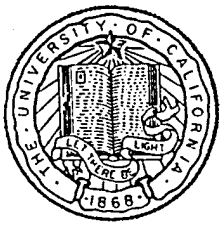

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Shallow Water Adaptive Array Processing and Data Analysis

William S. Hodgkiss

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Abstract

A horizontal planar array (HPA) was deployed during SWellEx-1 (Shallow Water evaluation cell Experiment #1). The focus of this effort was on an initial look at the HPA data to determine how well matched-field processing could be carried out with a seafloor array.

Research Objective

The objective of this project was to analyze the matched-field processing performance characteristics of the USTS horizontal planar array (HPA) which was deployed during SWellEx-1.

Research Summary

SWellEx-1 (Shallow Water evaluation cell Experiment #1) was carried out in August 1993 west of Point Loma in approximately 200 m water. During this experiment, McDonnell-Douglas deployed the USTS horizontal planar array (HPA) to the seafloor with the data being recorded on the R/P FLIP.

The focus of this effort was on an initial look at the HPA data to determine how well matched-field processing could be carried out with a seafloor array. Due to the relatively compact size of the USTS array (approximately 50 m aperture), it was demonstrated that the acoustic field from a distant source did not have sufficient complexity to yield good matched-field processing range-depth resolution. Simulations then were carried out to investigate how the range-depth resolution would improve with greater aperture in the direction of the source. These results from the USTS data analysis and simulations are reported in [1].

References

1. W.S. Hodgkiss, J. Murray, K.H. Kim, and A.M. Richardson, "Matched-Field Localization with both a Horizontal Planar Array and a Horizontal Line Array in a Shallow Water Environment," Seventh Matched-Field Processing Workshop, Defence Research Establishment Pacific (DREP), December 1994.

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